Chapter 22
Configure Accounting Options

To configure accounting options, include statements at the [edit accounting-options] hierarchy level of the configuration.

```
accounting-options {
    class-usage-profile profile-name {
        file filename;
        interval minutes;
        destination-classes {
            destination-class-name;
        }
        source-classes {
            source-class-name;
    }
    file filename {
        archive-sites {
            site-name;
        }
        files filenumber;
        size bytes;
        transfer-interval minutes;
    }
    filter-profile profile-name {
        counters {
            counter-name;
        }
        file filename;
        interval minutes;
        }
    }
    interface-profile profile-name {
        fields {
            field-name;
        }
        file filename;
        interval minutes;
    }
    routing-engine-profile profile-name {
        fields {
            field-name;
        }
        file filename;
        interval minutes;
    }
}
```

By default, accounting options are disabled.

This section describes the minimum required configuration and discusses the following tasks for configuring accounting options:

Minimum Accounting Options Configuration

To enable accounting options on the router, you must perform at least the following tasks:

Configure accounting options by including a file statement and one or more source-class-usage, destination-class-profile, filter-profile, interface-profile, or routing-engine-profile statements at the [edit accounting-options] hierarchy level:

```
[edit]
accounting-options {
    class-usage-profile profile-name {
        file filename;
        interval minutes;
        source-classes {
            source-class-name;
        destination-classes {
            destination-class-name;
        }
    }
    file filename {
        archive-sites {
            site-name;
        }
        files filenumber;
        size bytes;
        transfer-interval minutes;
    }
    filter-profile profile-name {
        counters {
            counter-name;
        }
        file filename;
        interval minutes;
    }
    interface-profile profile-name {
        fields {
            field-name;
        }
        file filename;
        interval minutes;
    }
```

```
    routing-engine-profile profile-name {
        fields {
            field-name;
        }
        file filename;
        interval minutes;
    }
}
```

Apply the profiles to the chosen interfaces or filters.

Apply an interface profile to a physical or logical interface by including the accounting-profile statement at either the [edit interfaces *interface-name*] or the [edit interfaces *interface-name* unit *number*] hierarchy level. For more information on interface profiles, see the *JUNOS Softw are Configur ation Guide: Interf aces and Class of Service*.

```
[edit interfaces]
interface-name {
    accounting-profile profile-name;
    unit number {
        accounting-profile profile-name;
    }
}
```

You do not apply destination class profiles to interfaces. Although the interface needs to have the destination-class-usage statement configured, the destination class profile automatically finds all interfaces with the destination class configured.

Apply a filter profile to a firewall filter by including the accounting-profile statement at the [edit firewall filter *filter-name*] hierarchy level:

```
[edit firewall]
filter filter-name {
    accounting-profile profile-name;
}
```

You do not need to apply the Routing Engine profile to an interface because the statistics are collected on the Routing Engine itself.

Configure Files

An accounting profile specifies what statistics should be collected and written to a log file. To configure an accounting-data log file, include the file statement at the [edit accounting-options] hierarchy level:

```
[edit accounting-options]
   file filename {
      archive-sites {
         site-name;
      }
      file filenumber;
      size bytes;
      transfer-interval minutes;
      }
   }
```

If the filename contains spaces, enclose it in quotation marks (" "). The filename cannot contain a forward slash (/). The file is created in the /var/log directory and can contain data from multiple profiles.

All accounting-data log files include header and trailer sections that start with a # in the first column. The header contains the file creation time, the hostname, and the columns that appear in the file. The trailer contains the time that the file was closed.

Whenever any configured value changes that affects the columns in a file, the file creates a new profile layout record that contains a new list of columns.

You must configure the file size; all other properties are optional.

Configure the Maximum Size of the File on page 228

Configure the Maximum Number of Files on page 229

Configure the Transfer Interval of the File on page 229

Configure Archive Sites on page 229

Configure the Maximum Size of the File

To configure the maximum size of the files, include the size statement at the [edit accounting-options file *filename*] hierarchy level:

```
[edit accounting-options file filename]
size bytes;
```

The size statement is the maximum size of the log file, in bytes, kilobytes (KB), megabytes (MB), or gigabytes (GB). The minimum value for *bytes* is 256 KB. You must configure *bytes*; the remaining attributes are optional.

Configure the Maximum Number of Files

To configure the maximum number of the files, include the file statement at the [edit accounting-options file *filename*] hierarchy level:

```
[edit accounting-options file filename]
files filenumber;
```

The files statement specifies the maximum number of files. When a log file (for example, profilelog) reaches its maximum size, it is renamed profilelog.0, then profilelog.1, and so on, until the maximum number of log files is reached. Then the oldest log file is overwritten. The minimum value for *filenumber* is 3 and the default value is 10.

Configure the Transfer Interval of the File

To configure the transfer interval of the files, include the transfer-interval statement at the [edit accounting-options file *filename*] hierarchy level:

```
[edit accounting-options file filename]
transfer-interval minutes;
```

Configure Archive Sites

After a file reaches its maximum size or the transfer-interval time is exceeded, the file is closed, renamed, and, if you configured an archive site, transferred to a remote host. To configure archive sites, include the archive-sites statement at the [edit accounting-options file *filename*] hierarchy level:

```
[edit accounting-options file filename]
archive-sites {
    site-name;
}
```

site-name is any valid FTP URL. For more information on how to specify valid FTP URLs, see the *JUNOS Internet Software Configuration Guide: Getting Started*. You can specify more than one URL, in any order. When a file is archived, the router attempts to transfer the file to the first URL in the list, trying the next site in the list only if the transfer does not succeed. The log file is stored at the archive site with a filename of the format *router-name_log-filename_timestamp*.

Configure the Interface Profile

An interface profile specifies the information collected and written to a log file. You can configure a profile to collect error and statistic information for input and output packets on a particular physical or logical interface.

To configure an interface profile, include the interface-profile statement at the [edit accounting-options] hierarchy:

```
[edit accounting-options]
interface-profile profile-name {
    fields {
        field-name;
    }
    file filename;
    interval minutes;
}
```

Each accounting profile must have a unique *profile-name*. To apply a profile to a physical or logical interface, include the accounting-profile statement at either the [edit interfaces *interface-name*] or the [edit interfaces *interface-name* unit *number*] hierarchy level. For more information, see the *JUNOS Software Configuration Guide: Interfaces and Class of Service*.

To configure an interface profile, you perform the tasks described in the following sections:

Configure Fields on page 230

Configure the File Information on page 230

Configure the Interval on page 231

Example: Configure the Interface Profile on page 231

Configure Fields

An interface profile must specify what statistics are collected. To configure which statistics should be collected for an interface, include the fields statement at the [edit accounting options interface-profile *profile-name*] hierarchy level:

```
[edit accounting-options interface-profile profile-name]
fields {
    field-name;
}
```

Configure the File Information

Each accounting profile logs its statistics to a file in the /var/log directory.

To configure which file to use, include the file statement at the [edit accounting options interface-profile *profile-name*] hierarchy level:

```
[edit accounting-options interface-profile profile-name]
file filename;
```

You must specify a filename statement for the interface profile that has already been configured at the [edit accounting-options] hierarchy level.

Configure the Interval

Each interface with an accounting profile enabled has statistics collected once per interval time specified for the accounting profile. Statistics collection time is scheduled evenly over the configured interval. To configure the interval, include the interval statement at the [edit accounting-options interface-profile *profile-name*] hierarchy level:

```
[edit accounting-options interface-profile profile-name]
interval minutes;
```

The minimum interval allowed is 1 minute. Configuring a low interval in an accounting profile for a large number of interfaces might cause serious performance degradation.

Example: Configure the Interface Profile

Configure the interface profile:

```
[edit]
accounting-options {
    file if_stats {
        size 40 files 5;
    }
    interface-profile if_profile1 {
        file if_stats;
        interval 30;
        fields {
            input-bytes;
            output-bytes;
            input-packets;
            output-packets;
            input-multicast;
            output-multicast;
        }
    }
    interface-profile if_profile2 {
        file if_stats;
        interval 30;
        fields {
            input-bytes;
            output-bytes;
            input-packets;
            output-packets;
            input-multicast;
            output-multicast;
        }
    }
interfaces {
    ge-1/0/0 {
        accounting-profile if_profile1;
        unit 0 {
            accounting-profile if_profile2;
        …
        }
    }
}
```

The two interface profiles, if-profile1 and if-profile2, write data to the same file, if-stats. The if-stats file might look like the following:

```
#FILE CREATED 976823478 2000-12-14-19:51:18
#hostname host
#profile-layout
if_profile2,epoch-timestamp,interface-name,snmp-index,input-bytes,output-bytes,
input-packets,output-packets,input-multicast,output-multicast
#profile-layout
if_profile1,epoch-timestamp,interface-name,snmp-index,input-bytes,output-bytes,
input-packets
if_profile2,976823538,ge-1/0/0.0,8,134696815,3681534,501088,40723,0,0
if_profile1,976823538,ge-1/0/0,7,134696815,3681534,501088
...
#FILE CLOSED 976824378 2000-12-14-20:06:18
```

Configure the Filter Profile

A filter profile specifies error and statistics information collected and written to a file. A filter profile must specify for which counter names statistics are collected. To configure a filter profile, include the filter-profile statement at the [edit accounting-options] hierarchy level:

```
[edit accounting-options]
filter-profile profile-name {
    counters {
        counter-name;
    }
    file filename;
    interval minutes;
}
```

To apply the filter profile, include the accounting-profile statement at the [edit firewall filter *filter-name*] hierarchy level. For more information on firewall filters, see the *JUNOS Software Configuration Guide: Interfaces and Class of Service*.

To configure a filter profile, you can perform the tasks described in the following sections:

Configure the Counters on page 233

Configure the File Information on page 233

Configure the Interval on page 233

Example: Configure a Filter Profile on page 234

Example: Configure Interface-Specific Firewall Counters and Filter Profiles on page 235

Configure the Counters

Statistics are collected for all counters specified in the filter profile. To configure the counters, include the counters statement at the [edit accounting-options filter-profile *profile-name*] hierarchy level:

```
[edit accounting-options filter-profile profile-name]
counters {
    counter-name;
}
```

Configure the File Information

Each accounting profile logs its statistics to a file in the /var/log directory.

To configure which file to use, include the file statement at the [edit accounting-options filter-profile *profile-name*] hierarchy level:

```
[edit accounting-options filter-profile profile-name]
file filename;
```

You must specify a filename for the filter profile that has already been configured at the [edit accounting options] hierarchy level.

Configure the Interval

Each filter with an accounting profile enabled has statistics collected once per interval time specified for the accounting profile. Statistics collection time is scheduled evenly over the configured interval. To configure the interval, include the interval statement at the [edit accounting-options filter-profile *profile-name*] hierarchy level:

```
[edit accounting-options filter-profile profile-name]
interval minutes;
```

The minimum interval allowed is 1 minute. Configuring a low interval in an accounting profile for a large number of filters might cause serious performance degradation.

Example: Configure a Filter Profile

Configure a filter profile:

```
[edit]
accounting-options {
    file fw_accounting {
        size 500k files 4;
    }
    filter-profile fw_profile1 {
        file fw_accounting;
        interval 60;
        counters {
            counter1;
            counter2;
            counter3;
        }
    }
}
firewall {
    filter myfilter {
        accounting-profile fw_profile1;
        ...
        term accept-all {
        then {
            count counter1;
            accept;
        }
    }
}
```

The filter profile, fw-profile1, writes data to the file fw_accounting. The file might look like the following:

```
#FILE CREATED 976825278 2000-12-14-20:21:18
#hostname host
#profile-layout
fw_profile1,epoch-timestamp,filter-name,counter-name,packet-count,byte-count
fw_profile1,976826058,myfilter,counter1,163,10764
...
#FILE CLOSED 976826178 2000-12-14-20:36:18
```

Example: Configure Interface-Specific Firewall Counters and Filter Profiles

To collect and log count statistics collected by firewall filters on a per-interface basis, you must configure a filter profile and include the interface-specific statement at the [edit firewall filter *filter-name*] hierarchy level:

Configure the firewall filter accounting profile:

```
[edit accounting-options]
    file cust1_accounting {
    size 500k;
}
filter-profile cust1_profile {
    file cust1_accounting;
    interval 1;
    counters {
        r1;
    }
}
```

Configure the interface-specific firewall counter:

```
[edit firewall]
filter f3 {
    accounting-profile cust1_profile;
    interface-specific;
    term f3-term {
        then {
            count r1;
                accept;
        }
    }
}
```

Apply the firewall filter to an interface:

```
[edit interfaces]
ge-1/0/0 {
    unit 0 {
        family inet {
            filter {
                input f3;
                output f3;
            }
            address 20.20.20.30/24;
        }
    }
}
```

The following example shows the contents of the cust1_accounting file in the /var/log folder that might result from the preceding configuration:

```
#FILE CREATED 995495212 2001-07-18-22:26:52
#hostname host
#profile-layout cust1_profile,epoch-timestamp,interfaces,filter-name,
counter-name,packet-count,byte-count
cust1_profile,995495572,ge-1/0/0.0,f3-ge-1/0/0.0-i,r1-ge-1/0/0.0-i,5953,1008257
cust1_profile,995495602,ge-1/0/0.0,f3-ge-1/0/0.0-o,r1-ge-1/0/0.0-o,5929,1006481
...
```

If the interface-specific statement is not included in the configuration, the following output might result:

```
#FILE CREATED 995495212 2001-07-18-22:26:52
#hostname host
#profile-layout cust1_profile,epoch-timestamp,interfaces,filter-name,
counter-name,packet-count,byte-count
cust1_profile,995495572,ge-1/0/0.0,f3,r1,5953,1008257
cust1_profile,995495632,ge-1/0/0.0,f3,r1,5929,1006481
```

Configure Source Class Usage Options

You can maintain packet counts based on the entry and exit points for traffic passing through your network. Entry and exit points are identified by source and destination prefixes grouped into disjoint sets defined as *source classes* and *destination classes*. You can define classes based on a variety of parameters, such as routing neighbors, autonomous systems, and route filters.

Source class usage (SCU) counts packets sent to customers by performing lookup on the IP source address and the IP destination address. SCU makes it possible to track traffic originating from specific prefixes on the provider core and destined for specific prefixes on the customer edge. You must enable SCU accounting on both the inbound and outbound physical interfaces.

Destination class usage (DCU) counts packets from customers by performing lookup of the IP destination address. DCU makes it possible to track traffic originating from the customer edge and destined for specific prefixes on the provider core router.

For more information about source class usage, see the *JUNOS Internet Software Configuration Guide: Policy Framework*, *JUNOS Internet Software Configuration Guide: Interfaces and Class of Service*, and *JUNOS Internet Software Feature Guide*.

To configure source class usage options, perform the following tasks described in this section:

Configure SCU and/or DCU

Configure SCU on a Virtual Loopback Interface on page 238

Configure Class Usage Profiles on page 240

Configure SCU and/or DCU

To configure SCU and/or DCU, perform the following tasks described in this section:

Create Prefix Route Filters in a Policy Statement on page 237

Apply the Policy to the Forwarding Table on page 237

Enable Accounting on Inbound and Outbound Interfaces on page 237

Create Prefix Route Filters in a Policy Statement

```
[edit policy-options]
policy-statement scu-1 {
    term term1
        from {
            route-filter 192.168.1.0/24 orlonger;
        }
        then source-class gold;
    }
}
```

Apply the Policy to the Forwarding Table

```
[edit]
routing-options {
    forwarding-table {
            export scu-1;
        }
    }
}
```

Enable Accounting on Inbound and Outbound Interfaces

You can enable accounting inbound and outbound interfaces:

```
[edit]
interfaces {
    so-6/1/0 {
        unit 0 {
            family inet;
                accounting {
                    destination-class-usage;
                    source-class-usage {
                        output;
                    }
                }
            }
        }
    }
}

[edit]
interfaces {
    ge-0/1/0 {
        unit 0 {
            family inet6 {
                accounting {
                    source-class-usage {
                        input;
                    }
                }
            }
        }
    }
}
```

Optionally, you can include the input and output statements on a single interface:

```
[edit]
interfaces {
    ge-0/1/2 {
        unit 0 {
            family inet6 {
                accounting {
                    source-class-usage {
                        input;
                        output;
                    }
                }
            }
        }
    }
}
```

For more information on configuring route filters and source classes in a routing policy, see the *JUNOS Software Configuration Guide: Policy Framework* and the *JUNOS Software Configuration Guide: Interfaces and Class of Service* .

Configure SCU on a Virtual Loopback Interface

To configure source class usage on the virtual loopback interface, perform the tasks described in the following sections:

Configure a Virtual Loopback Interface on a Provider Edge Router Equipped with a Tunnel PIC on page 238

Map the VRF Instance Type to the Virtual Loopback Interface on page 239

Send Traffic Received From the Virtual Loopback Interface Out the Source Class Output Interface on page 240

Configure a Virtual Loopback Interface on a Provider Edge Router Equipped with a Tunnel PIC

```
[edit interfaces]
vt-0/3/0 {
    unit 0 {
        family inet {
            accounting {
                source-class-usage {
                    input;
                }
            }
        }
    }
}
```

Map the VRF Instance Type to the Virtual Loopback Interface

```
[edit]
routing-instances {
    VPN-A {
        instance-type vrf;
        interface at-2/1/1.0;
        interface vt-0/3/0.0;
        route-distinguisher 10.255.14.225:100;
        vrf-import import-policy-name;
        vrf-export export-policy-name;
        protocols {
            bgp {
                group to-r4 {
                    local-address 10.27.253.1;
                    peer-as 400;
                    neighbor 10.27.253.2;
                }
            }
        }
    }
}
```

For SCU and DCU to work, you must not include the vrf-table-label statement at the [edit routing-instances instance-name] hierarchy level.

Send Traffic Received From the Virtual Loopback Interface Out the Source Class Output Interface

```
[edit interfaces]
at-1/1/0 {
    unit 0 {
        family inet {
            accounting {
                source-class-usage {
                    output;
                }
            }
        }
    }
```

For more information on configuring source class usage on the virtual loopback interface, see the *JUNOS Software Configuration Guide: Interfaces and Class of Service*.

Configure Class Usage Profiles

To collect class usage statistics, perform the tasks described in the following sections:

Configure a Class Usage Profile on page 240

Configure the File Information on page 241

Configure the Interval on page 241

Create a Class Usage Profile to Collect Source Class Usage Statistics on page 241

Create a Class Usage Profile to Collect Destination Class Usage Statistics on page 242

Configure a Class Usage Profile

You can configure the class usage profile to collect statistics for particular source and destination classes.

To configure the class usage profile to filter by source classes, include the source-classes statement at the [edit accounting options class-usage-profile *profile-name*] hierarchy level:

```
[edit accounting-options class-usage-profile profile-name]
source-classes {
    source-class-name;
}
```

To configure the class usage profile to filter by destination classes, include the destination-classes statement at the [edit accounting options class-usage-profile *profile-name*] hierarchy level:

```
[edit accounting-options class-usage-profile profile-name]
destination-classes {
    destination-class-name;
}
```

Configure the File Information

Each accounting profile logs its statistics to a file in the /var/log directory.

To configure which file to use, include the file statement at the [edit accounting-options class-usage-profile *profile-name*] hierarchy level:

```
[edit accounting-options class-usage-profile profile-name]
file filename;
```

You must specify a filename for the source class usage profile that has already been configured at the [edit accounting options] hierarchy level. You can also specify a filename for the destination class usage profile configured at the [edit accounting options] hierarchy level.

Configure the Interval

Each interface with a class usage profile enabled has statistics collected once per interval specified for the accounting profile. Statistics collection time is scheduled evenly over the configured interval. To configure the interval, include the interval statement at the [edit accounting-options class-usage-profile *profile-name*] hierarchy level:

```
[edit accounting-options class-usage-profile profile-name]
interval minutes;
```

Create a Class Usage Profile to Collect Source Class Usage Statistics

To create a class usage profile to collect source class usage statistics:

```
[edit]
accounting-options {
    class-usage-profile scu-profile1;
    file usage-stats;
    interval 15;
    source-classes {
        gold;
        silver;
        bronze
        }
    }
}
```

The class usage profile, scu-profile1, writes data to the file scu_accounting. The file might look like the following:

```
#FILE CREATED 976825278 2000-12-14-20:21:18
#profile-layout, scu_profile,epoch-timestamp,interface-name,source-class,
packet-count,byte-count
scu_profile,980313078,ge-1/0/0.0,gold,82,6888
scu_profile,980313078,ge-1/0/0.0,silver,164,13776
scu_profile,980313078,ge-1/0/0.0,bronze,0,0
scu_profile,980313678,ge-1/0/0.0,gold,82,6888
scu_profile,980313678,ge-1/0/0.0,silver,246,20664
scu_profile,980313678,ge-1/0/0.0,bronze,0,0
```

Create a Class Usage Profile to Collect Destination Class Usage Statistics

To create a class usage profile to collect destination class usage statistics:

```
[edit]
accounting-options {
    class-usage-profile dcu-profile1;
    file usage-stats
    interval 15;
    destination-classes {
        gold;
        silver;
        bronze
        }
    }
}
```

The class usage profile, dcu-profile1, writes data to the file dcu_accounting. The file might look like the following:

```
#FILE CREATED 976825278 2000-12-14-20:21:18
#profile-layout, dcu_profile,epoch-timestamp,interface-name,destination-class,
packet-count,byte-count
dcu_profile,980313078,ge-1/0/0.0,gold,82,6888
dcu_profile,980313078,ge-1/0/0.0,silver,164,13776
dcu_profile,980313078,ge-1/0/0.0,bronze,0,0
dcu_profile,980313678,ge-1/0/0.0,gold,82,6888
dcu_profile,980313678,ge-1/0/0.0,silver,246,20664
dcu_profile,980313678,ge-1/0/0.0,bronze,0,0
...
#FILE CLOSED 976826178 2000-12-14-20:36:18
```

Configure the Routing Engine Profile

The Routing Engine profile collects Routing Engine statistics and logs them to a file. The Routing Engine profile specifies the fields for which statistics are collected.

To configure a Routing Engine profile, include the routing-engine-profile statement at the [edit accounting-options] hierarchy level:

```
[edit accounting-options]
routing-engine-profile profile-name {
    fields {
        field-name;
    }
    file filename;
    interval minutes;
}
```

To configure a Routing Engine profile, perform the tasks described in the following sections:

Configure Fields on page 243

Configure the File Information on page 243

Configure the Interval on page 243

Example: Configure a Routing Engine Profile on page 243

Configure Fields

A Routing Engine profile must specify what statistics are collected. To configure which statistics should be collected for the Routing Engine, include the fields statement at the [edit accounting options routing-engine-profile *profile-name*] hierarchy level:

```
[edit accounting-options routing-engine-profile profile-name]
fields {
    field-name;
}
```

Configure the File Information

Each accounting profile logs its statistics to a file in the /var/log directory.

To configure which file to use, include the file statement at the [edit accounting options routing-engine-profile *profile-name*] hierarchy level:

```
[edit accounting-options routing-engine-profile profile-name]
file filename;
```

You must specify a *filename* for the Routing Engine profile that has already been configured at the [edit accounting-options] hierarchy level.

Configure the Interval

A Routing Engine profile has statistics collected once per interval time specified for the profile. Statistics collection time is scheduled evenly over the configured interval. To configure the interval, include the interval statement at the [edit accounting-options routing-engine-profile *profile-name*] hierarchy level:

```
[edit accounting-options routing-engine-profile profile-name]
interval minutes;
```

Example: Configure a Routing Engine Profile

Configure a Routing Engine profile:

```
[edit accounting-options]
file my-file {
    size 300k;
}
routing-engine-profile profile-1 {
    file my-file;
    fields {
        host-name;
        date;
        time-of-day;
        uptime;
        cpu-load-1;
        cpu-load-5;
        cpu-load-15;
    }
}
```